



## CONTRIBUTION OF CLASSROOM CLIMATE IN LEARNING MODERN AGRICULTURE AT SENIOR SECONDARY SCHOOLS IN ESWATINI

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### ABSTRACT

Classroom climate is vital; thus, it was imperative to examine its contribution in the learning of Modern Agriculture in Eswatini. A descriptive research design was employed to study senior secondary agriculture students in Eswatini. Intact classes for Form 5 agriculture students were sampled from 16 schools in Eswatini. A valid and reliable ( $r=.82$ ) self-administered questionnaire was used for data collection in February 2019. It was validated by three experts from the Department of Agricultural Education and Extension. Findings revealed that only the process and products variables contribute to the classroom climate which enhances the learning of agriculture for senior secondary school students in Eswatini. The most contributing items for the process variables were: freedom to ask question during the lessons, involvement in all lesson activities, and the ability of the teacher to give clear directions; whereas application of agriculture skills learnt at school at home, and transformation of mind brought by learning agriculture were the main items for the products variables. Therefore, the study concluded that the process and product variables were the main contributing variables for a classroom climate that enhance the learning of Modern Agriculture. The study recommended that an enabling environment that will lead to both effective learning and transferring of knowledge from class to farming at home should be ensured.

**KEYWORDS:** Classroom climate, context variable, presage variable, process variable, product variable.

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## INTRODUCTION

Classroom climate refers to the prevailing mood, attitudes, standards, and tone in which students and teachers feel when they are in the classroom. Classroom climate is a perceived quality of the setting. It emerges in a somewhat fluid state from the complex transaction of many immediate environmental factors. (e.g., physical, material, organizational, operational, and social variables). Both the climate of the classroom and the school reflect the influence of a school's culture (Fraser, 1998; Freiberg, 1999).

Classroom climate is a major determiner of classroom behaviour and learning. Understanding how to establish and maintain a positive classroom climate is basic to improving schools. There is a positive relationship between classroom climate and student engagement; student behavior; student self-efficacy; student achievement and social and emotional development; principal's leadership style; stages of educational reform; teacher burnout; and overall quality of school life (Fraser, 1998). According to Freiberg (1999), the impact of classroom climate may be greater on students from low-income homes and groups that often are discriminated against.

Existing literature on organizational climate suggests an increasing demand for higher achievement test scores and reliance on social and tangible rewards to control behavior. Organizational climate motivate performance that contribute to a classroom climate which is reactive and over-controlling (Mahony & Hextall, 2000). A proactive approach to developing a positive classroom climate requires careful attention to enhancing the quality of life in the classroom for students and staff. It assists in pursuing a curriculum that promotes riot free environment with a focus on academic work. It also promotes social and emotional learning that enable teachers to be effective with a wide range of students, thus, fostering intrinsic motivation for classroom learning and teaching (Adelman & Taylor, 1997).

Mahony and Hextall (2000) argued that the establishment and maintenance of a positive climate in every classroom must be a central focus of the staff at school. School psychologists can play an increasing role in working with teachers in their classrooms to increase teacher competence and provide collegial support. This means going beyond traditional consultation about classroom management strategies but also assisting individuals manifesting behavioural, learning, and emotional problems. Psychologists can team-up with teachers to enhance classroom climate. In addition, school psychologists can work with other student support staff by establishing and maintaining a positive school climate that promotes students' well-being thus eliminating barriers to teaching and learning (Adelman & Taylor, 1997).

In Eswatini, there is no documented study that has been conducted to examine the contribution of classroom climate in the learning of Modern Agriculture in Senior Secondary Schools. This may have a negative effect on the learning of Modern Agriculture. Therefore, this study sought to identify the contribution of classroom climate in the learning of Modern Agriculture at Senior Secondary Schools in Eswatini.



### **Purpose and objectives of the study**

The study sought to find out the contribution of classroom climate in the learning of Modern Agriculture at senior secondary schools in Eswatini. The objectives of the study were to:

1. Identify variables that contribute to classroom climate in Modern Agriculture in Eswatini
2. Describe the influence of classroom climate on student's participation during Modern Agriculture lessons in Eswatini.
3. Describe student-teacher interaction in agriculture lessons to enhance classroom climate in the lesson in Eswatini.
4. Identify the methods of motivation used by agriculture teachers to motivate students during Modern agriculture lessons in Eswatini.

### **Theoretical framework**

The study was under-pinned by the Theory for Teaching and Learning developed by Dunkin and Biddle (1974). This theory evolved from Mitzel's concepts in the 1960s. The theory postulates that the teaching and learning process can be better understood using four variables, namely: presage, context, process, and product variables for research on teaching (see Figure 1) (Bryant, 2009). The Theory for Teaching and Learning developed by Dunkin and Biddle (1974) provides a framework for this research study as it identifies many variables that influence classroom teaching and learning.

### **Presage Variables**

These are teaching traits that influence the teaching and learning process (Dunkin & Biddle, 1974; Price 2011). They consist of teacher formative experiences, their training experiences and their personal attributes. The teacher formative experiences include all the incidences and situations that teachers go through which mold and shape their behaviour and mental reactions. For instance, this includes the teacher's religion, culture and family background that has led their classification into ascribed positions in society. Their training experiences include the events that the teachers went through during the pre-service training at college or university. These events include the undergraduate courses taken, post-graduate education, teaching practice experience, in-service and all evidence that have the possibilities of shaping their beliefs in the teaching profession. Teacher attributes include their beliefs, attitude, perceptions and background knowledge towards the whole learning process. These properties are presumed to characterize an individual teacher because the teacher carries these traits within himself or herself (Dunkin & Biddle, 1974). They are embedded deep within themselves that they serve to explain the teachers' behavior in response to a variety of situations. Based on this model, it is clear that teacher formative experience and teacher training influence teacher's classroom practices, which in turn influence student's learning and achievement (Bryant, 2009).

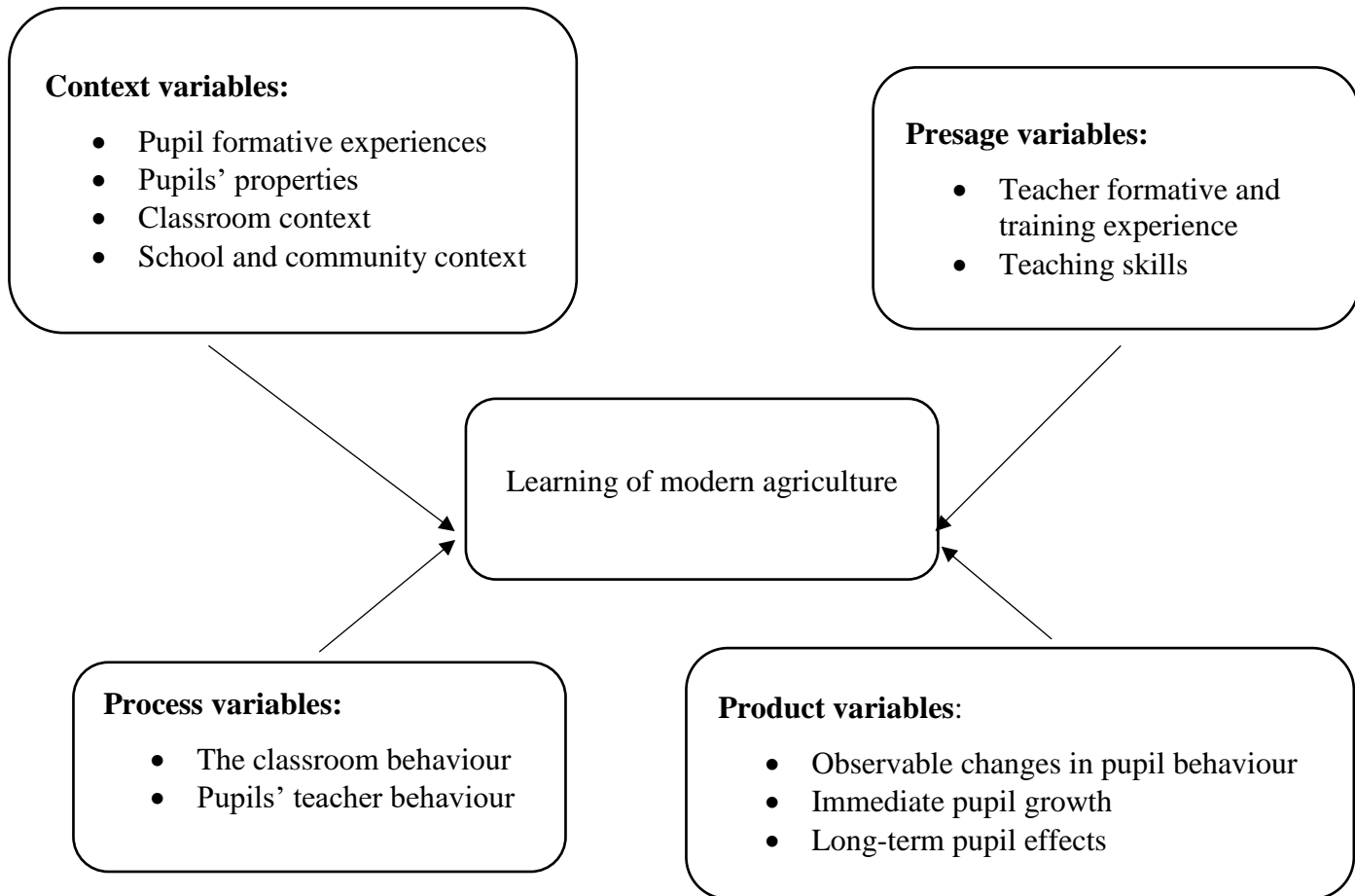


Figure 1: The Theory of Learning: source: Dunkin and Biddle (1974).

**Context Variables**

Context variables refer to the conditions to which the teacher must adjust characteristics of the environment to enhance the teaching and learning process (Bryant, 2009). Context variables consist of the nature of the pupils and the physical or instructional situation or setting in which the educational process is taking place. With these two factors combined, maximum input learning could be achieved (Dunkin & Biddle, 1974). The context variables also include the pupil formative experiences, pupil properties, and school and community contingencies (Bryant, 2009). These variables contribute to the contexts of classroom education and are likely to affect the learning processes. Students come to class with formative experiences of their own. Students differ depending on their social class, age, sex, language, and life experiences. Each student also comes with different abilities, knowledge, and attitudes (Dunkin & Biddle, 1974).

Each school and community varies greatly in the climate, ethnic composition, size, resources available, physical facilities, homogeneity of instructors, and student populations. Schools are also constrained by laws and customs. All of these variables affect the teaching and learning process (Dunkin & Biddle, 1974). Furthermore, context variables consist of student



and evaluation factors. These factors are concerned with the conditions to which teachers have to make personal adjustments. Student factor also comprises the nature of the social background of the students- their attitude, motivation, interest and proficiency level that determine the nature of the classroom the teachers have to face. The prior knowledge, goals, beliefs and dispositions students bring into class has a great impact on their learning. Like the teacher's early formative experiences, the student's social status and family background can determine classroom interaction (Dunkin & Biddle, 1974). Dunkin and Biddle further stated that it is advantageous if teachers could observe and identify the nature of their students, their background and the disposition they bring into class; to reciprocate with teaching methods suitable for them to attain maximum learning.

Finally, the context variables also consist of the classroom contexts (also viewed as the classroom social climate). The context variables mainly include size, lighting, equipment, layout, and noise level. Classroom contexts also cover the curriculum and accepted conduct (established rules) of class members. All of these factors influence students' perception of what instructors do to enhance the teaching and learning process (Bryant, 2009).

### **Process Variables**

Process variables involve the actual classroom activities, that is, teacher behaviours, learner behaviours and changes in behaviour (Dunkin & Biddle, 1974). These involve what the instructors and students do in the classroom: for example, asking questions, giving answers, explaining assignments, and correcting inappropriate behaviour. These variables focus on all instructor and student observable behaviours. As often assumed, the success of teaching is in the teacher's hands. Therefore, how and why the teachers behave in class matters. This is because teachers are responsible for stimulating students' interest and in gearing the mood and flow of the class. The process variables form the heart of the model since this is where the actual teaching takes place.

### **Product Variables**

This is the final phase where the outcomes of what and how teachers have performed in classrooms are shown. This outcome depends largely on the nature of the teacher's instruction and on the students' reception; which shows the importance of the classroom environment. It is the observable change that comes about in students as a result of their involvement in classroom activities with their teachers and other students (Bryant, 2009). It is usually expected that this outcome is positive. In reality, this outcome can be either positive or negative; as a result of the classroom experiences. The ultimate goal of education is the long-term effects on students. It is hoped that students will acquire the information and motivation needed to enter their profession.

## **METHODOLOGY**

The study employed a descriptive survey to study the classroom climate in the learning of Modern Agriculture in Eswatini. It targeted Form 5 agriculture learners in 12 schools around the country. Thus, three schools were randomly selected per region. One class was randomly sampled from schools having more than one Form 5 classes and all the learners in the class sampled participated in the study. A questionnaire was developed guided by the objectives; then used for data collection. A Likert-type scale was used to measure the level of agreement of learners to the variables contributing to classroom climate. The Likert-type scale had the following ranges: 1=Strongly disagree; 2= Slightly disagree; 3= Disagree;



4= Slightly agree; 5=Agree; 6= Strongly agree. The questionnaire was validated by four experts from the Department of Agriculture Education and Extension at UNESWA. Inter-item reliability calculated by Cronbach Alpha revealed that the instrument was 82% reliable.

The questionnaires were hand delivered to the agriculture learners in February 2019. Letters seeking permission to conduct the study were written to the principals and the respondents through the Ministry of Education and Training, and permission was granted. To ensure confidentiality and anonymity, the questionnaire was formulated such that respondents' names were not revealed. Also, the data were accessible only to the researcher. The respondents' parents were also requested to fill Assent Forms for minors and Consent Forms for the learners above 18 years. Descriptive statistics such as means and standard deviation in the Statistical Package for Social Sciences (SPSS) version 20 were used for analysing the data

## FINDINGS AND DISCUSSION FOR THE STUDY

### **Variables that contribute to classroom climate in modern agriculture**

There are four variables which were investigated on how they contribute to the learning of Modern agriculture in High schools in Eswatini. These were presage, context, process and product variables (see Table 1). Table 1 depicts that all the variables except for presage variables ( $M=2.66$ ,  $SD=1.21$ ) were contributing to the classroom climate in learning Modern Agriculture by senior secondary school students in Eswatini. The most contributing variables were product variables ( $M=4.94$ ,  $SD=1.12$ ), followed by the process variables ( $M=4.83$ ,  $SD=1.23$ ). These findings partly confirm those by Dunkin and Biddle (1974) who postulated that all the variables were influencing the teaching and learning process.

Regarding the product variables, the most prominent items were: applying the content learnt at home ( $M=5.10$ ,  $SD=1.03$ ), content learnt in agriculture changes the way the learners think ( $M=5.03$ ,  $SD=0.98$ ), and considering agriculture as a career after finishing school (Mean= $4.81$ ,  $SD=1.44$ ). Similarly, regarding the process variables, the prominent items were: students freely asking questions in class during the lessons ( $M=5.41$ ,  $SD=0.95$ ); learners being involved in all activities during a lesson ( $M=4.95$ ,  $SD=1.15$ ) and the teacher's ability to give clear direction in class ( $M=4.82$ ,  $SD=1.13$ ). Even though the learners concurred that the school has enough furniture ( $M=4.89$ ,  $SD=1.47$ ); access to agriculture tools ( $M=4.54$ ,  $SD=1.45$ ); having enough agriculture textbook ( $M=3.91$ ,  $SD=1.73$ ) and the ability to carry practical without the guidance from the teacher ( $M=3.80$ ,  $SD=1.65$ ); the learners lamented that age ( $M=2.25$ ,  $SD=1.62$ ), gender ( $M=2.26$ ,  $SD=1.66$ ) and class size ( $M=2.96$ ,  $SD=1.71$ ) were influencing their learning of agriculture. Finally, although the presage variable was not contributing to the learning of agriculture by the learner, the learners observed that the agriculture teachers knew the subject matter ( $M=5.25$ ,  $SD=0.94$ ).

The findings confirm the argument of Dunkin and Biddle (1974) that teachers' formative experiences such as the training experiences have an effect on their teaching in class. Similarly, Bryant (2009) found that the teacher formative experience and teacher training influence their classroom practices, which in turn influence student's learning. According to Fung and Chow (2008), the success of teaching is in the teacher's "hands" because they are responsible in stimulating student's interest and in gearing the mood and flow of the class. Similarly, Bryant (2009) found that product variables are the observable changes that come about in students as a result of their involvement in classroom activities with their teachers and other students.

**Table1: Contributing variables to classroom climate**

<b>Variables</b>	<b>M</b>	<b>SD</b>
<b>Presage Variables</b>		
The teacher knows agriculture very well	5.25	0.94
Teacher's gender affects the way he/she teaches agriculture	1.86	1.33
Teacher's background affects the way he/she teaches agriculture	1.77	1.35
Teacher's age affects the way he/she teaches agriculture	1.76	1.21
<b>Average</b>	<b>2.66</b>	<b>1.21</b>
<b>Context variables</b>		
Having enough furniture	4.89	1.47
It's easy for the learner to use agriculture tools	4.54	1.45
Having enough agriculture textbooks	3.91	1.73
Ability to do practical without guidance of a teacher	3.80	1.65
Having enough tools and equipment for practical session	3.49	1.75
Having enough tools	3.45	1.76
The size of my class influences my learning	2.96	1.71
Student gender influencing the learning of agriculture	2.26	1.66
The age of the learner influencing learning of Agriculture	2.25	1.62
<b>Average</b>	<b>3.51</b>	<b>1.64</b>
<b>Process variables</b>		
Freely to ask questions in class during a lesson	5.41	0.95
Involved in all activities during a lesson	4.95	1.15
Teacher is able to give clear direction in class	4.82	1.13
Teacher asks questions every after a lesson	4.73	1.28
Teacher gives answers after marking	4.73	1.46
Teacher explains assignments	4.57	1.38
Teacher is able to stimulate student's interest during the lesson	4.57	1.26
<b>Average</b>	<b>4.83</b>	<b>1.23</b>
<b>Product variables</b>		
Applying at home what I learnt at school	5.10	1.03
The content I learnt in agriculture changes the way I think	5.03	0.98
Consider to take agriculture as a career after finishing school	4.81	1.44
Easy to apply what was learnt in class in a test or exam	4.80	1.02
<b>Average</b>	<b>4.94</b>	<b>1.12</b>

**Scale:** ≤ 1.45 =Never; 1.45-2.44=Sometimes; 2.45-3.44=Often; and 3.45-4.00= Very often

### **Influence of classroom climate on student's participation during agriculture lesson**

Table 2 indicates that classroom participation contributes to the learning of modern agriculture in High Schools in Eswatini (M=2.79, SD=0.48). Teachers often consider responses from the students which subsequently motivates the students to



participate during the lesson ( $M= 3.09, 0.87$ ). Also, they ensure that students respond to questions asked by teachers during an agriculture lesson ( $M=2.72, SD=0.86$ ) and every student participate in the classroom by getting individual responsibilities ( $M= 2.62, SD= 1.07$ ). Student participation during lesson is encouraged in student-centred approach. This approach actively engages the young person to think critically during the learning process (Nonkukhetkhong, et al., 2009; Schuh, 2004; White, 2007).

**Table 2: Students' participation**

Variable	M	SD
Teacher considers student's responses during the lesson	3.09	0.87
Ask questions when something is not clear	2.96	0.98
Easy to respond to questions in class	2.80	0.89
Respond to questions asked by the teacher	2.72	0.86
Teacher gives some individual responsibilities in class	2.61	1.07
Can consult with a neighbour during the lesson for clarity	2.25	0.97
<b>Overall</b>	<b>2.79</b>	<b>0.48</b>

**Scale:**  $\leq 1.45$  =Never; 1.45-2.44=Sometimes; 2.45-3.44=Often; and 3.45-4.00= Very often

### Contribution of student-teacher interaction to classroom climate for agriculture lessons

Table 3 shows that student-teacher interaction contributes to the learning of Modern Agriculture in senior secondary schools in Eswatini ( $M=3.24, SD=0.49$ ). The table further depicts that teachers often respect students during a lesson ( $M=3.40, SD=0.73$ ), ensure interaction between the teacher and the students by asking questions during the lesson ( $M=3.40, SD=0.73$ ), teachers respond to the student's questions during a lesson ( $M=3.38, SD=0.81$ ), and teachers also allow students to ask questions during the lesson when something is not clear ( $M=3.05, SD=0.86$ ). Similarly, Burk, Kouwehoven, and Vedder (2009), Connell and Klem (2004), and Fraser and Goh (2000) reported that students who were reported having positive relationships with their teachers were more motivated and engaged in classroom activities than students having negative relationships.

**Table 3: Teacher-student interaction**

Variables	M	SD
Teacher respects students during lesson	3.40	0.73
Teacher asks questions during a lesson	3.40	0.73
Teacher responds to questions in class	3.38	0.81
Teacher is very caring thus learners enjoy being in the agriculture class	3.30	0.89
Teacher outlines the importance of the lesson	3.23	0.84
Teacher explains assignments clearly	3.14	0.85
Students ask questions where it is not clear	3.05	0.86
Teacher provides directions in class direction	3.03	0.86
<b>Overall</b>	<b>3.24</b>	<b>0.49</b>

**Scale:**  $\leq 1.45$  =Never; 1.45-2.44=Sometimes; 2.45-3.44=Often; and 3.45-4.00= Very often





**The methods of motivation used by agriculture teachers to motivate students during agriculture lessons**

Table 4 indicates that the methods of motivation used by agriculture teachers contributed to the learning of modern agriculture (M=2.34, SD=0.38). Teachers often make some practical examples of some concepts that they teach in class (M=3.13, SD=0.86) which enables students to understand the concepts. Sometimes, the teachers allow hands-on activities during the lesson to ensure that every student is part of the lesson (M=2.92, 0.92), make follow-ups to check for progress (M=2.73, SD=0.91), and kept student motivated as they give reasons why students should write assignments (M=2.54, SD=1.03). According to Hussin, Maarof and Dcuiz (2001), motivation in learning plays a vital role. It also produces learners who continuously engage themselves in learning even after completing targeted goal.

**Table 4:** *Methods of motivation*

<b>Method</b>	<b>M</b>	<b>SD</b>
Teacher sets examples for some concepts learnt in class	3.13	0.86
Teacher allows hands-on activities when learning	2.92	0.92
Teacher makes some follow ups to check progress	2.73	0.91
Teacher gives reasons for assignments	2.54	1.03
Teacher gives praises for correct answers	2.54	0.89
Teacher makes jokes during lesson	2.39	0.95
Teacher uses group work in class	2.02	0.93
Teacher never minds mistakes	1.89	0.10
Teacher gives some marks for participation in class	1.66	0.98
Teacher gives rewards for top students	1.45	0.84
<b>Overall</b>	<b>2.34</b>	<b>0.84</b>

**Scale:** ≤ 1.45 =Never; 1.45-2.44=Sometimes; 2.45-3.44=Often; and 3.45-4.00= Very often

**CONCLUSION**

The study concluded that classroom climate was mainly influenced by process and product variables and the presage variable did not contribute to the learning of agriculture as perceived by learners. In terms of the context variable, schools have enough furniture and agriculture textbooks but wanting in the agriculture tools. Effective learning of agriculture is also hindered by large classes and age as learning varies between old and young. Also learning is influenced by the sex of the learner as the subject is still considered to be muscular. Regarding the context variables, the conclusion reached was that agriculture teachers are able create enabling learning environment as the learners are free to ask questions, involved in learning activities, and teachers also give clear directions and questions. The learning of agriculture is impactful on the learners as they are able to transfer knowledge to home or community situation and they envisage agriculture related career. There was interaction between the learners and teachers as indication that learners were participating during the lessons. The manner teachers’ conduct their classes is a source of motivation which contributes to the learning of Modern Agriculture in Eswatini.



## RECOMMENDATIONS

Based on the findings of the study, the researcher came up with the following recommendations.

1. It was recommended that teachers should continue ensuring that the environment is threat-free so that the learners are at ease in asking questions where necessary.
2. Since, presage variable was found not contributing towards the learning of Modern Agriculture at school, there is a need for the Department of Agricultural Education and Extension to constantly revisit the programme in order to assist student teachers in this aspect.
3. Agriculture Department in the schools should ensure that they have enough tools and replace them where necessary so that all the learners have them during practical sessions.
4. Gender is still a barrier in the teaching and learning of Agriculture. Therefore, the Ministry of Education and Training through the inspectorate and subject panel must roll-out programmes to recruit, retain and support female learners and teachers in the teaching and learning of the subject.
5. Agriculture teachers must constantly motivate learners as this contributes to positive classroom climate which enhances the learning of agriculture.
6. Teachers should not be given a big class size so that they can be able to provide immediate feedback.



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